REMARKS

In her first office action on the merits, the Examiner has rejected Claims 1, 2, 4, 7, 8 and 11 as anticipated by Yokoyama, US Patent No. 5,586,138 ("Yokoyama"), and rejected Claims 1, 2, 4, 7, 8, 10 – 14, 16, 18, 21, 22 and 24 – 26 as obvious in view of a combination of Happ et al., "Single Mode Operation of Coupled-Cavity Lasers Based On Two-Dimensional Photonic Crystals", Applied Physics Letters Vol. 79, No. 25, pp. 4091-4093, 17 Dec. 2001 ("Happ") and Zhou et al., "Processing and characterization of a GaAs/Al_xO_y Quasi-Three-Dimensional Photonic Bandgap Material", 1999 IEEE Lasers and Electro-Optics Society Annual Meeting, Proceedings, Vol. 1, pp. 236-237 ("Zhou"). Applicants respectfully traverse these grounds for rejection.

Rejections in view of Yokoyama

Claim 1 is novel over Yokoyama not least because Yokoyama does not teach or suggest the feature of the first and second cavities being laterally offset from each other, or in other words not colinear with each other. This ground for rejection can only be made if "laterally offset" is interpreted as synonymous with "offset". The Examiner has argued that the cavities L1 and L2 of Yokoyama are "offset" (i.e. longitudinally offset) so this reads onto the original clause in claim 1 ("the first and second optical cavities being laterally offset") only because there is no definition of "laterally" in the claim.

To lend clarity to Claims 1 and 14, the Applicants have replaced "laterally offset" with language by which the recited second optical axis is *not colinear* with the first optical axis. This is what the Applicants meant by their initial use of the phrase "laterally offset." This arrangement is immediately evident from FIGURE 2, in which first and second optical cavities

have axes which are not coaxial or colinear with each other but rather are spaced in a lateral direction and, in this illustrated embodiment, are parallel to each other. See also the lateral separation 'd' of the cavities (see Figure 2; page 16, lines 1 and 24; page 17, line 15; and page 19, line 25). The skilled person's association of the expression "lateral" with "transverse" is also confirmed at the Specification, page 5, line 3. See also the Specification's contrasting use of "longitudinal displacement Δx" at page 17, line 16.

Figure 1 of Yokoyama clearly shows two resonator cavities, respectively of length L1 and L2 and respectively defined between a facet 2 and a distributed feedback structure 4, and between the distributed feedback structure 4 and a facet 3. The cavities are colinear; they share a common axis. The two resonator cavities are coupled end-to-end, and are therefore not laterally offset with respect to one another.

Yokoyama does not describe or suggest arranging the resonator cavities to be laterally offset from each other or noncolinear with each other. Nor does Yokoyama make Claim 1 obvious. There is no teaching or suggestion in Yokoyama to provide any incentive for the skilled person to abandon the resonator cavity arrangement set out in Yokoyama's Figure 1 in favor of that of the claimed invention. The person of ordinary skill in the art could not, therefore, arrive at the present claimed invention from the teaching of Yokoyama.

In respect of the rejection of Claims 2 and 16, Applicants must also respectfully dispute the Examiner's interpretation of "parallel". Applicants urge that this term necessarily means that one recited structure is spaced from the other, by a constant distance. If the spacing were zero, the structures couldn't be "parallel" to each other anymore but instead would be coaxial or colinear.

Rejections in view of Happ and Zhou

Happ discloses a co-axially coupled microcavity laser, in which two cavities having a common optical axis are coupled by means of an intracavity photonic crystal mirror. The laser emits a single mode due to the coupling of the two cavities by this mirror (see page 4902, right hand column). Happ does not describe or suggest arranging the resonator cavities to be noncolinear with each other or laterally offset from each other.

Zhou also does not disclose the noncolinear or lateral offset feature. Taking these two documents in combination would not therefore provide the combination of features as claimed.

The dependent claims (Claims 2, 4, 7, 8, 10 – 13, 16, 18, 21, 22 and 24 – 26) are allowable at least for their dependency on allowable Claim 1 or 14. In addition, the prior art does not show or suggest parallel optical cavities (Claims 2 and 16); a cavity end mirror of the first cavity which is not coplanar with either cavity end mirror of the second cavity (Claims 7 and 21), the separation of the optical cavities along their lateral edges by photonic material (Claims 8 and 22), a periodicity of the photonic crystal material which is orthogonal to the first or second optical axes (Claims 11 and 24), or a periodicity of the photonic crystal material along each of two or more axes (Claims 12 and 26). These dependent claims are allowable for these reasons also.

Conclusion

None of the cited references or the rest of the prior art, either taken alone or in combination, teach or suggest the off-axis coupling together of optical cavities by photonic crystals. The examined claims therefore clearly and patentably define over the prior art and Applicants therefore respectfully request an early Notice of Allowance on them.

This Reply to Examiner's Action is being submitted within the initial three-month shortened statutory period, and Applicant's amendments do not necessitate the payment of additional claim fees. Therefore no fee is thought to be due in conjunction with this submission. Nonetheless, the Commissioner is hereby authorized to charge Deposit Account No. 503982 of Momkus McCluskey, LLC to cover any fee deficiency.

Respectfully submitted,

/*Jefferson Perkins*/
Jefferson Perkins
Registration No. 31,407

CUSTOMER NO. 64770

MOMKUS McCLUSKEY, LLC
1001 Warrenville Road, Suite 500
Lisle, Illinois 60532
Telephone: (630) 434 0414
Fax: (630) 434 0444
Email: jperkins@momlaw.com